

# KIC 009811915

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009811915-01	OBS	7232.01	1.966803	132.691723	187.9	1.798	8.3	8.6	0.80	5595	1.31	641.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009811915-01	OBS	PC	0.98	0	0	0	0	CENT_KIC_POS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

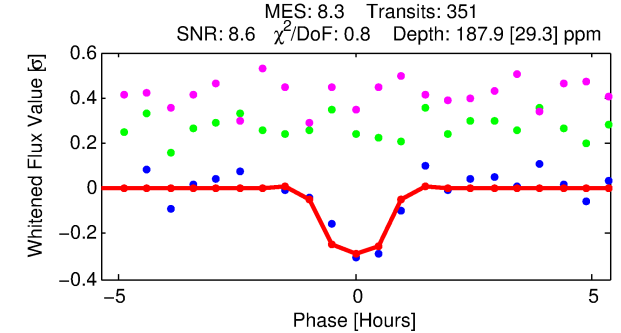
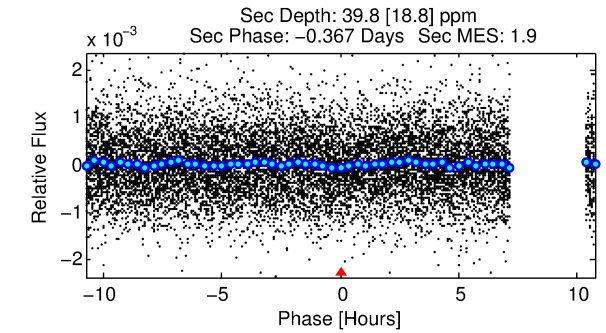
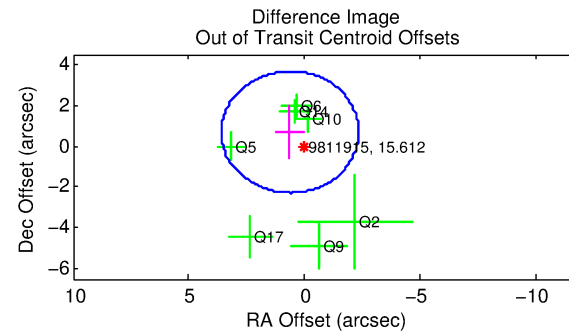
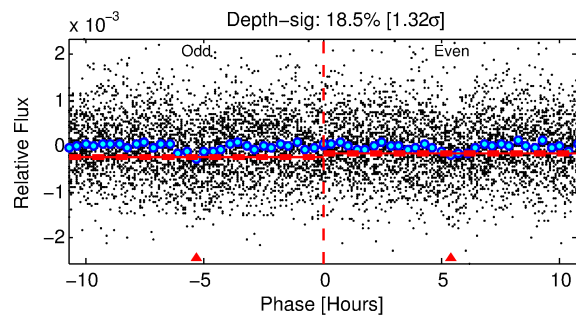
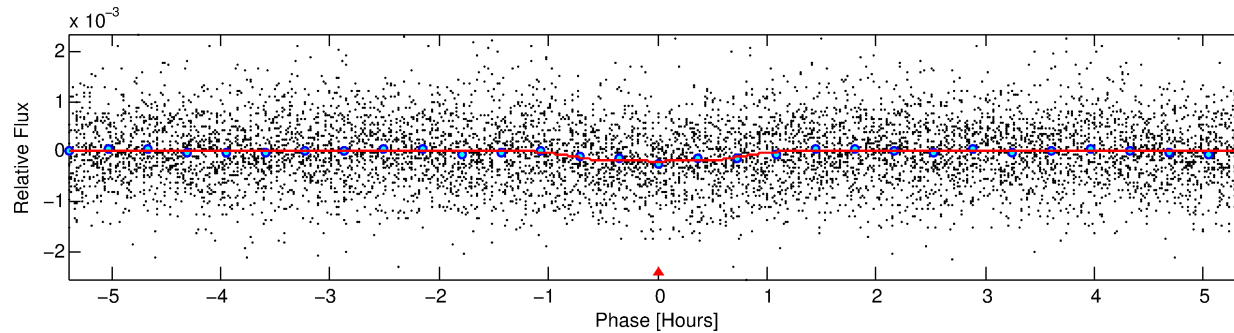
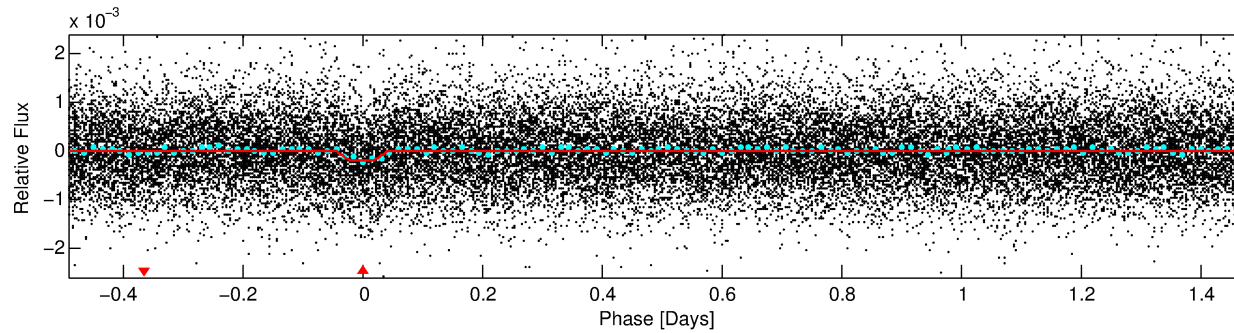
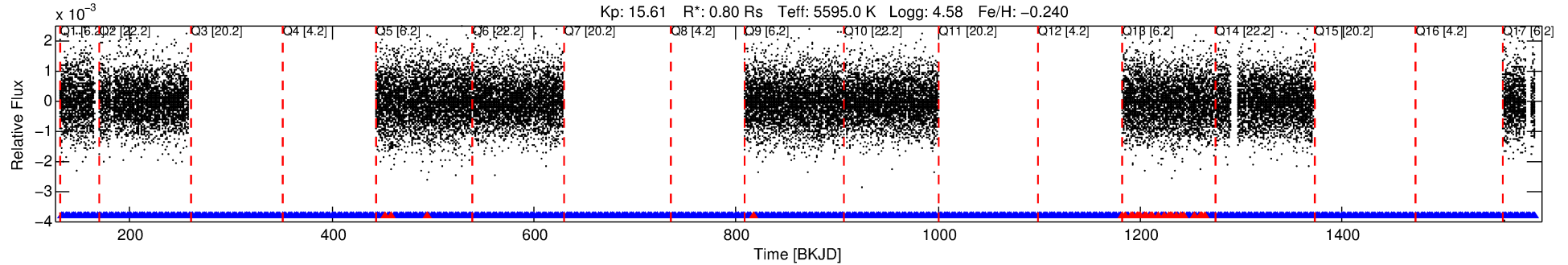
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009811915-01

No Significant Match Found

# DV One-Page Summary

KIC: 9811915 Candidate: 1 of 1 Period: 1.967 d  
KOI: K07232.01 Corr: 0.880



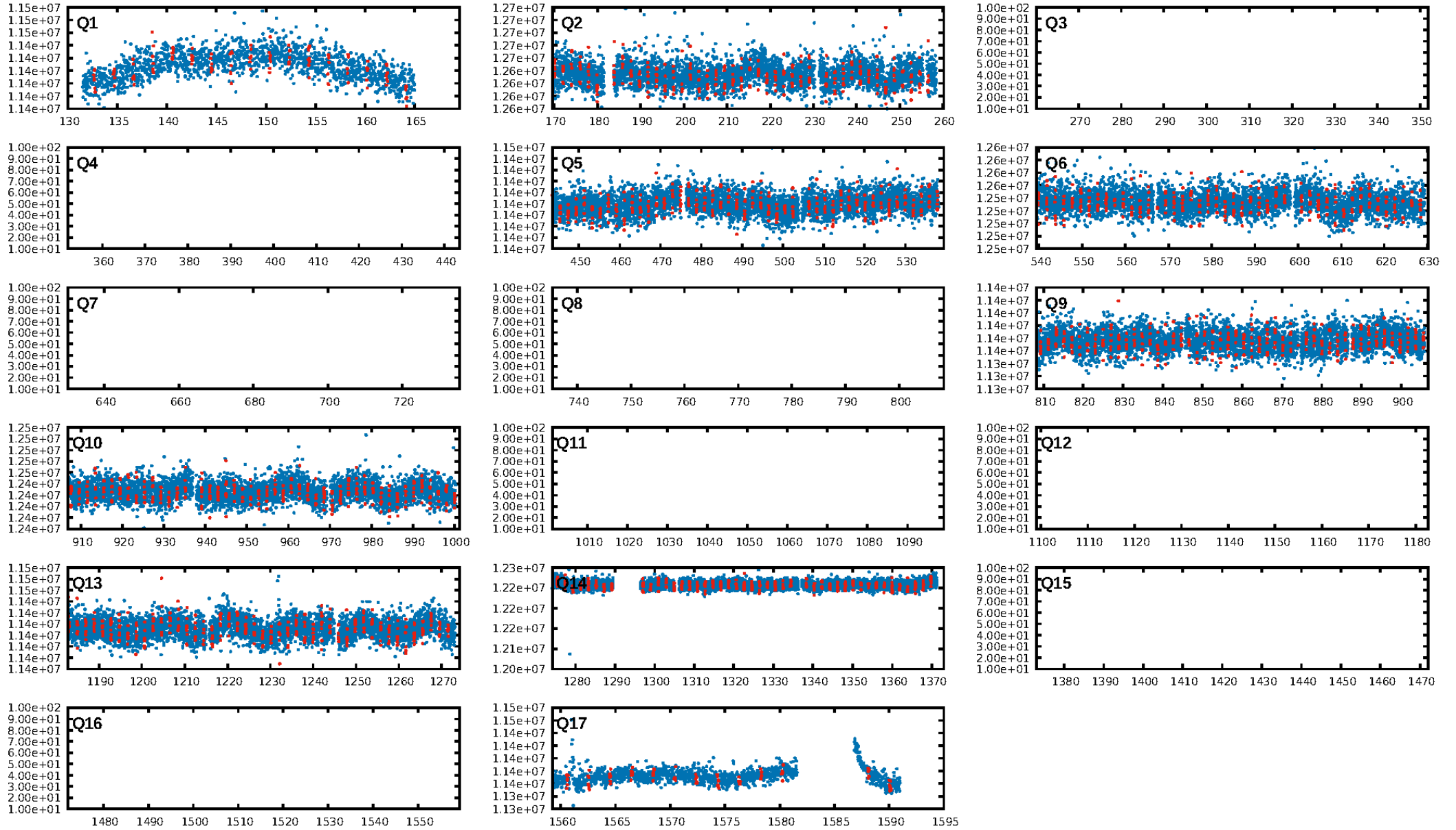
## DV Fit Results:

Period = 1.96680 [0.00002] d  
Epoch = 132.6917 [0.0034] BKJD  
Rp/R\* = 0.0150 [0.0141]  
a/R\* = 3.99 [16.44]  
b = 0.90 [0.92]  
Seff = 641.24 [182.73]  
Teff = 1283 [91] K  
Rp = 1.31 [1.26] Re  
a = 0.0295 [0.0050] AU  
Ag = 11.11 [21.69] [0.47 $\sigma$ ]  
Teffp = 3622 [1758] K [1.33 $\sigma$ ]

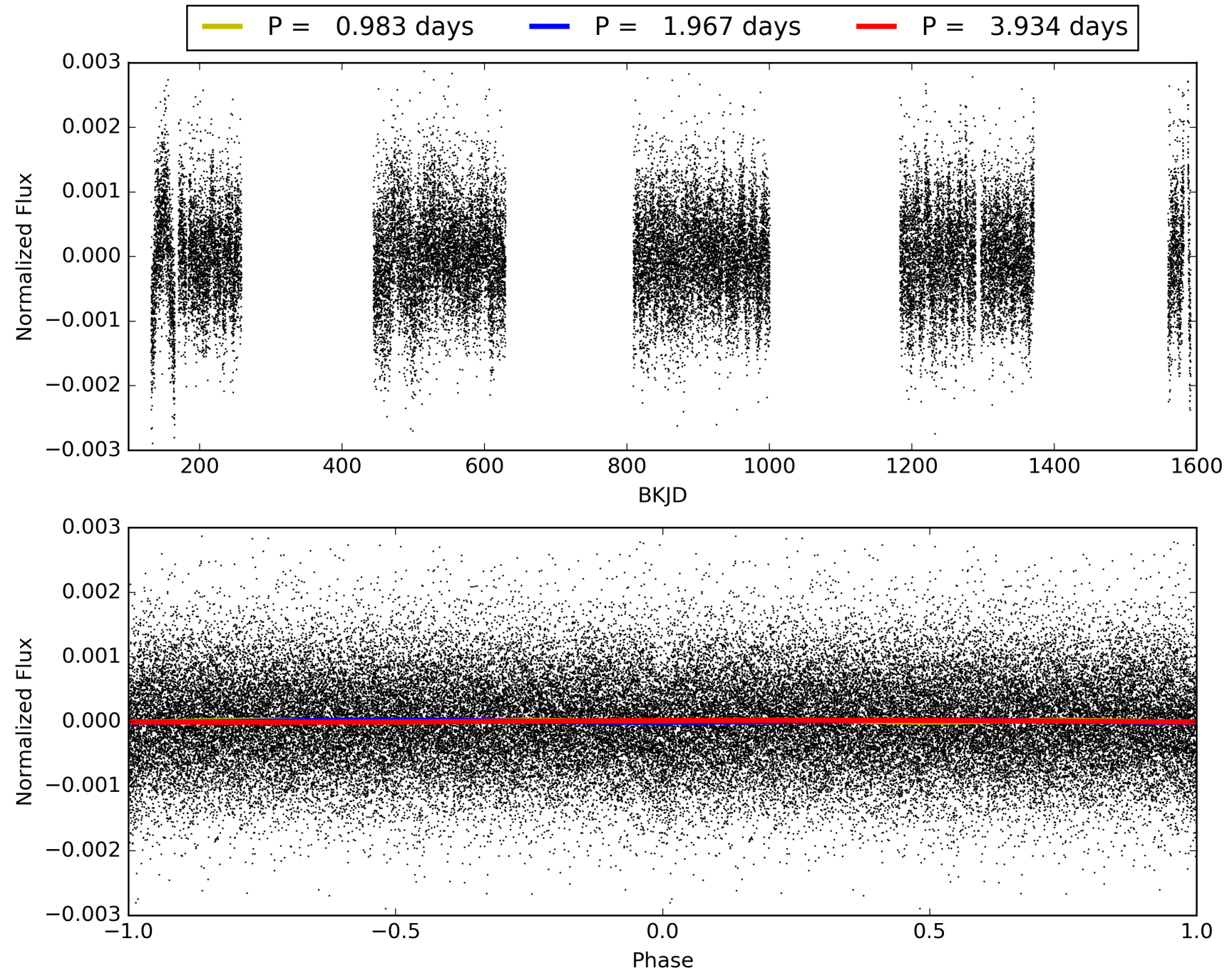
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.92e-17  
RollingBand-fgt: 0.92 [294/321]  
GhostDiagnostic-chr: 12.01  
Centroid-sig: N/A  
Centroid-so: 2.886 arcsec [1.60 $\sigma$ ]  
OotOffset-rm: 0.932 arcsec [0.94 $\sigma$ ]  
OotOffset-st: 4/0/0/3 [7]  
KicOffset-rm: 0.577 arcsec [0.55 $\sigma$ ]  
KicOffset-st: 4/0/0/3 [7]  
DiffImageQuality-fgm: 0.57 [4/7]  
DiffImageOverlap-fno: 1.00 [9/9]

# TCE 009811915-01, PDC Light Curves

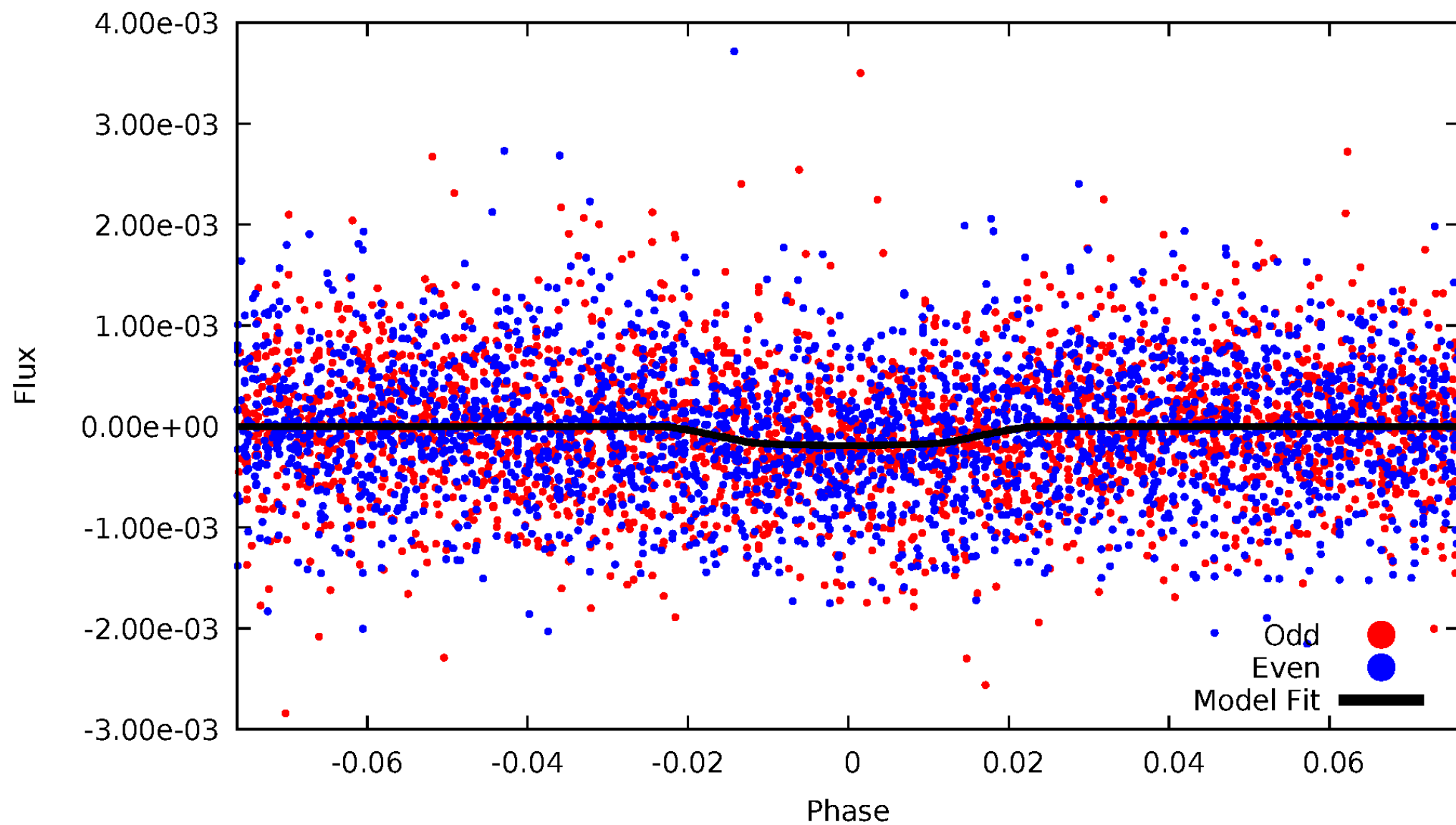


TCE 009811915-01



# DV Odd/Even

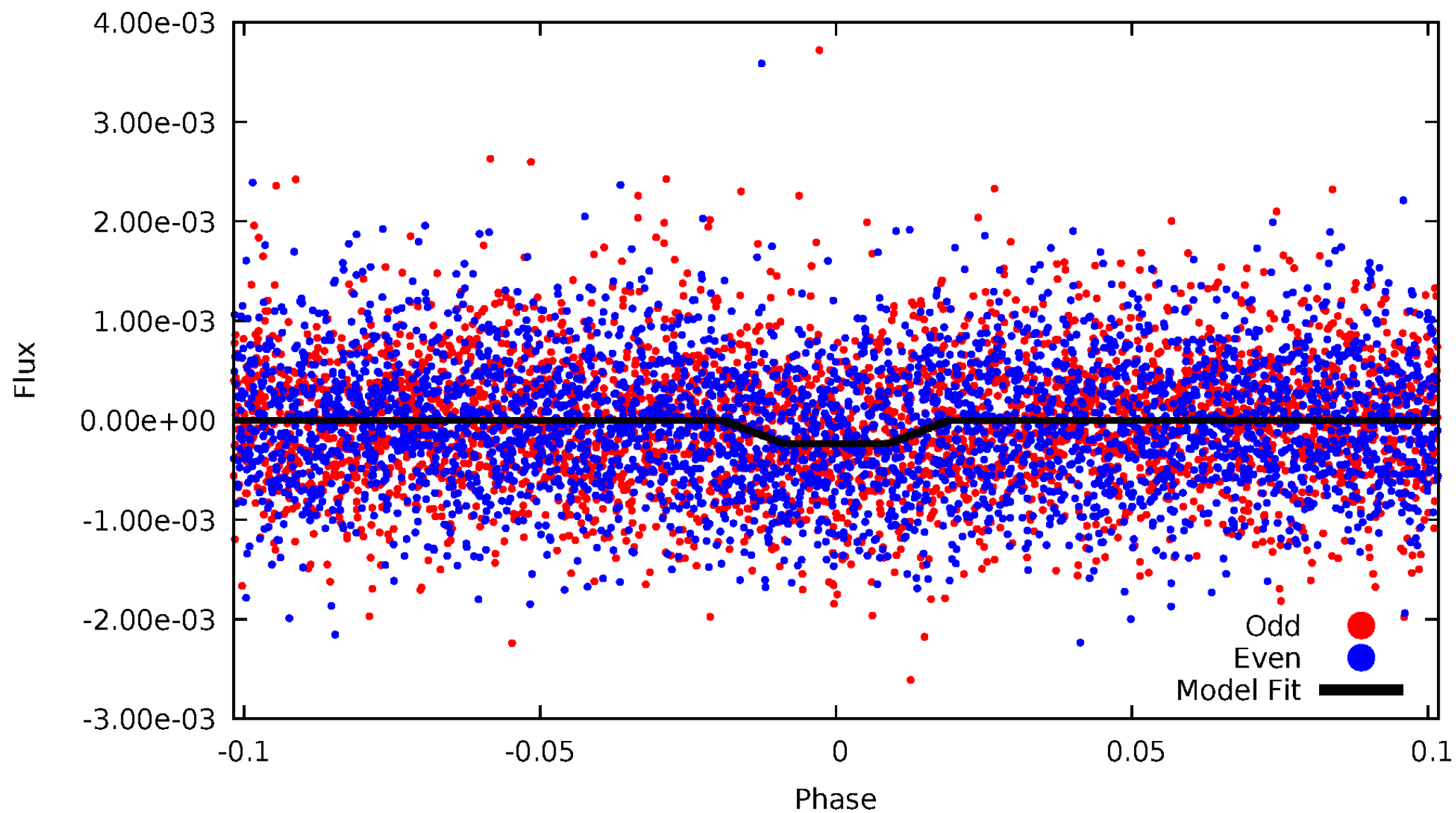
TCE 009811915-01





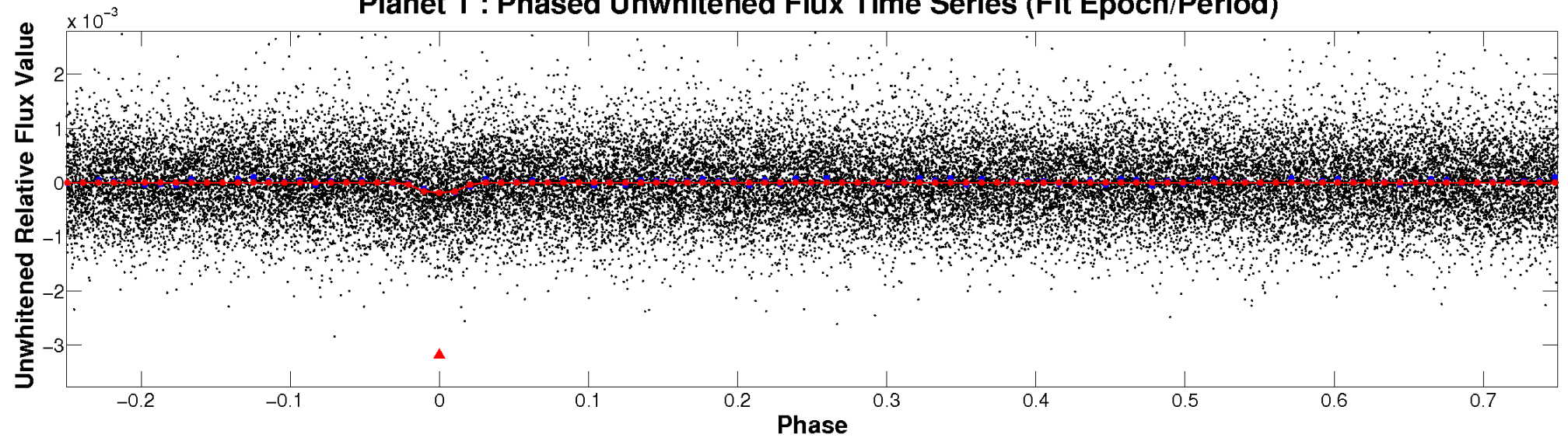
# ALT Odd/Even

TCE 009811915-01

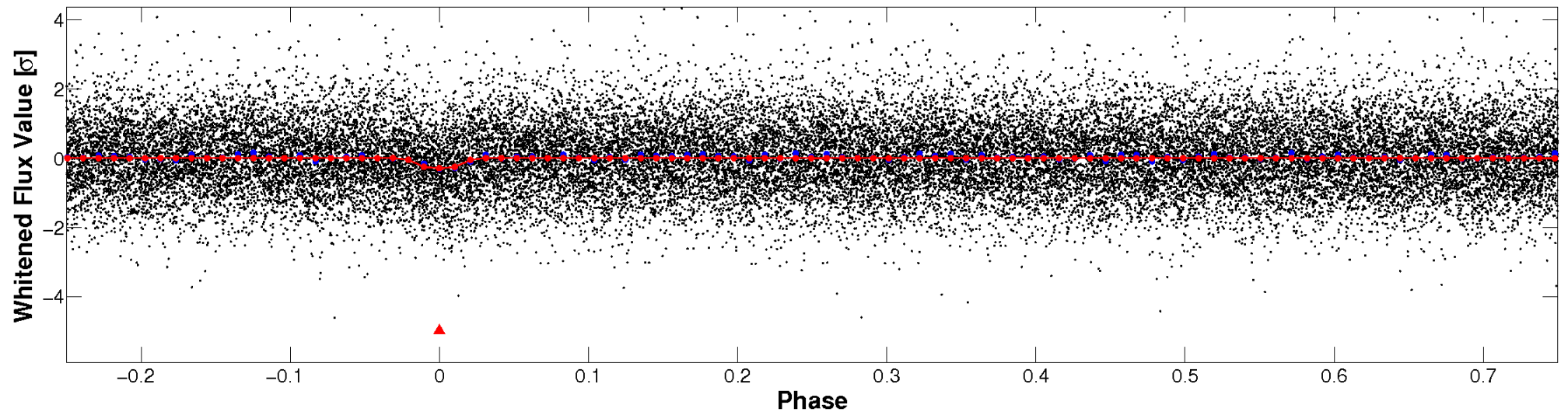


# Non-Whitened Vs. Whitened Light Curve

**Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

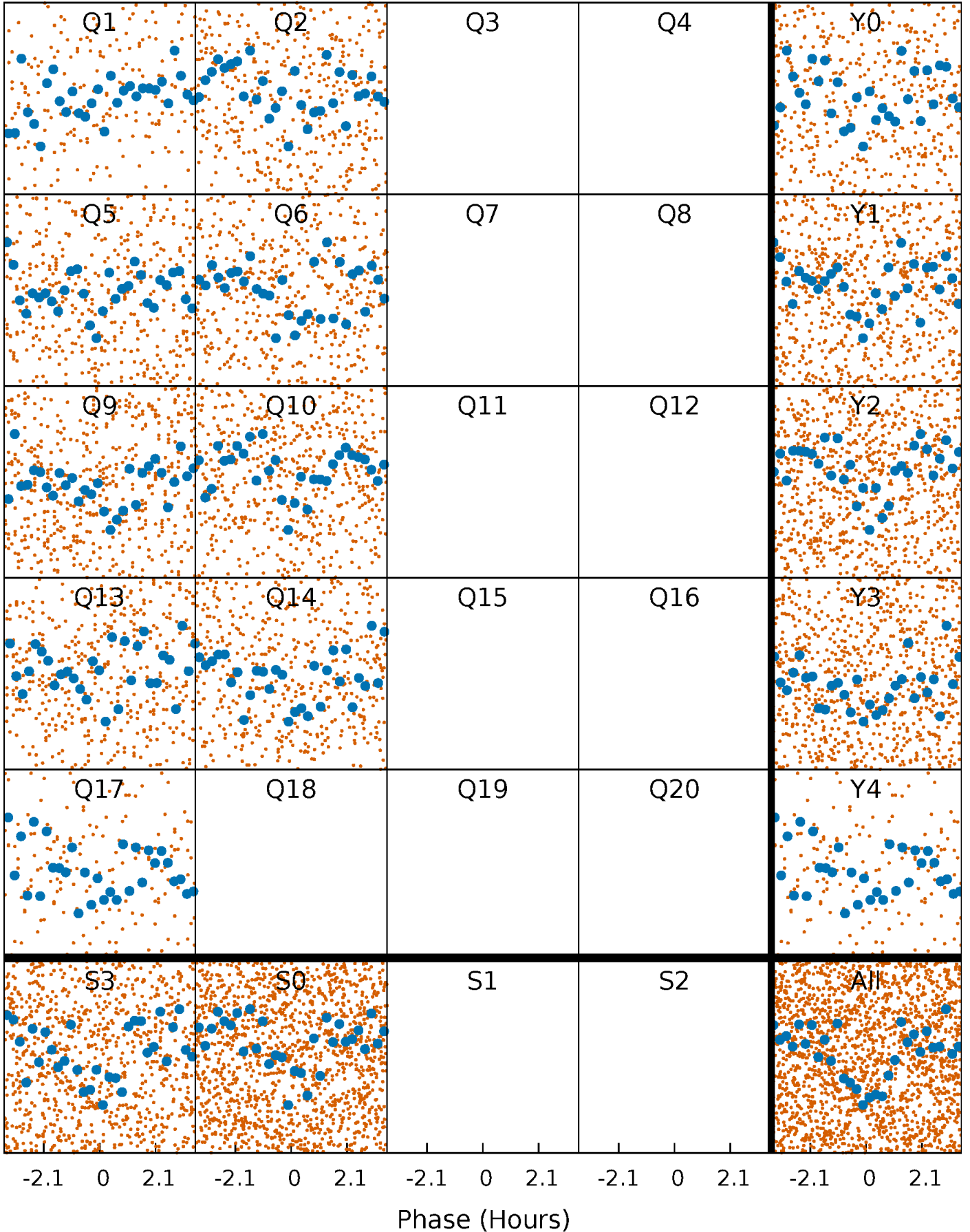


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

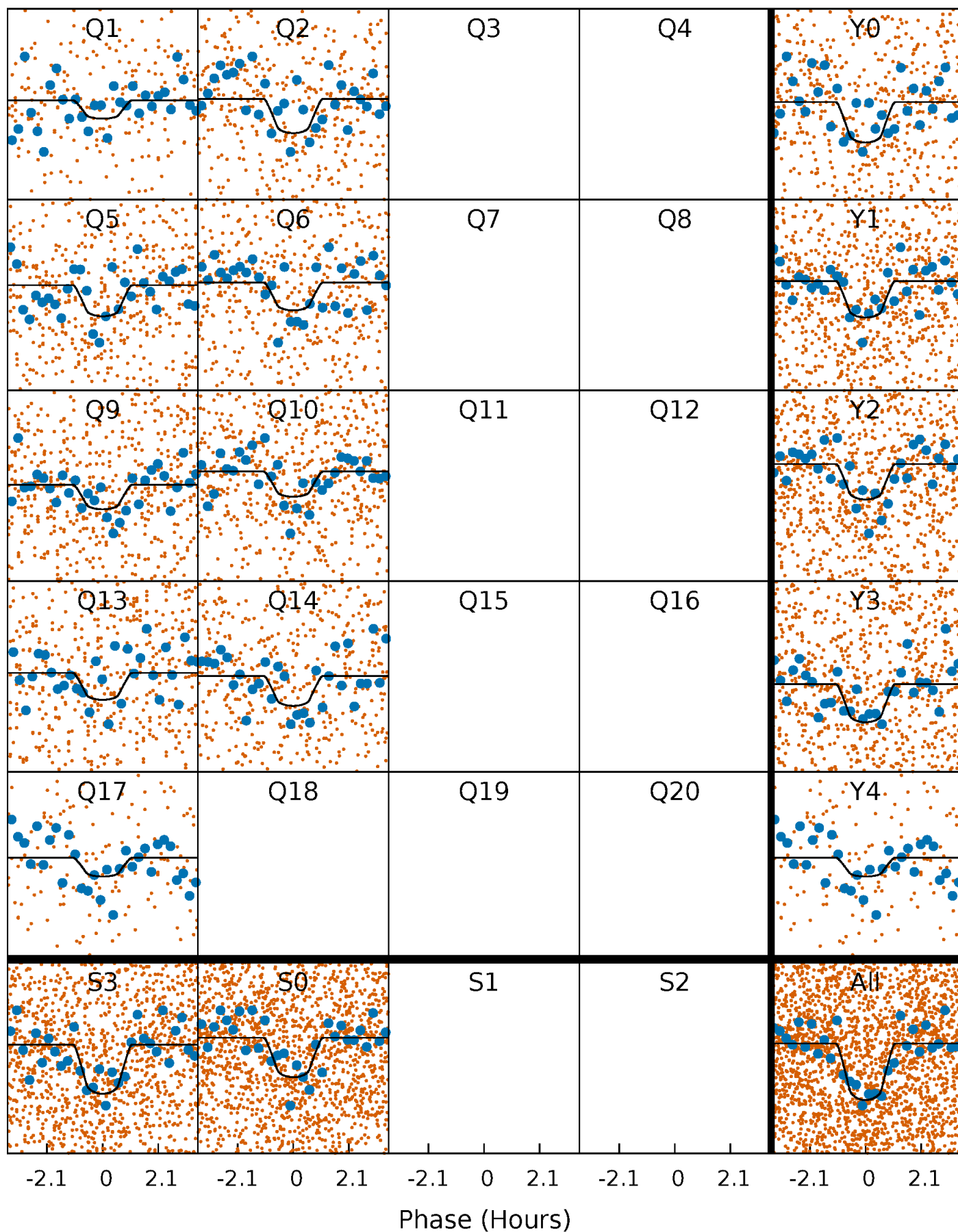
TCE 009811915-01 P= 1.966803 Days  $T_0=132.691723$  (BKJD)





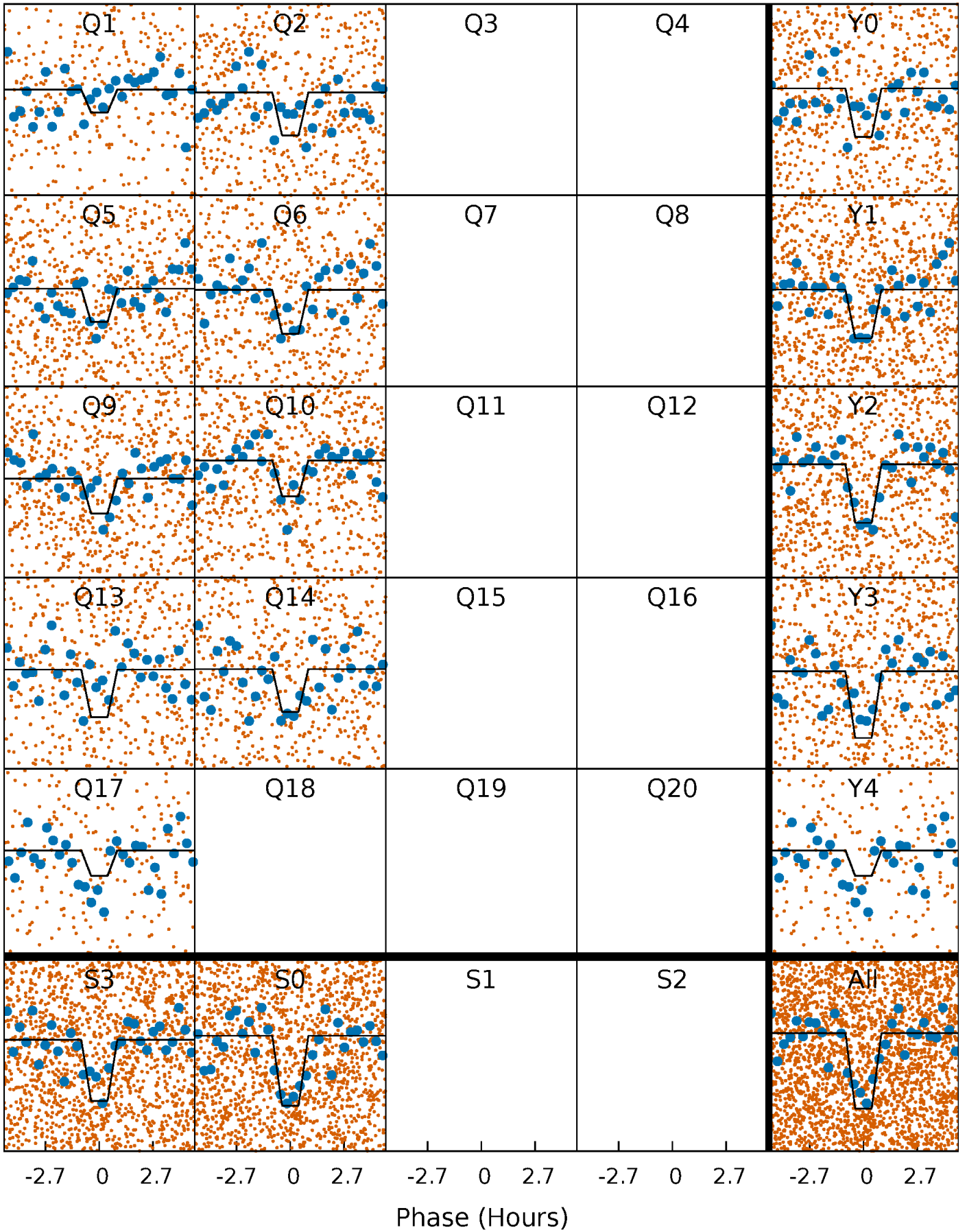
# DV Quarter-Phased Transit Curves

TCE 009811915-01 P= 1.966803 Days  $T_0=132.691723$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

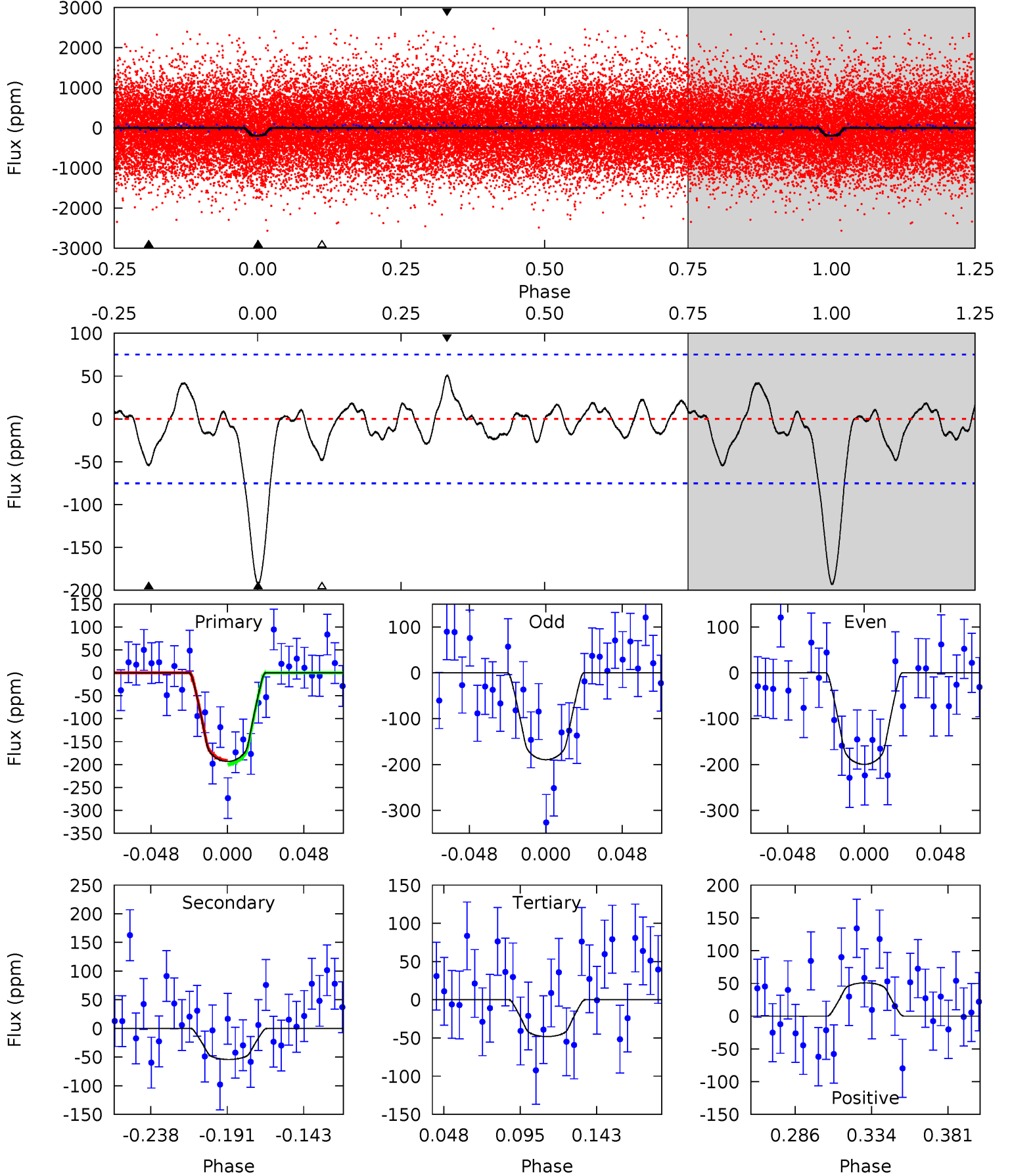
TCE 009811915-01   P= 1.966827 Days    $T_0=132.687005$  (BKJD)



# DV Model-Shift Uniqueness Test

009811915-01, P = 1.966803 Days, E = 130.724920 Days

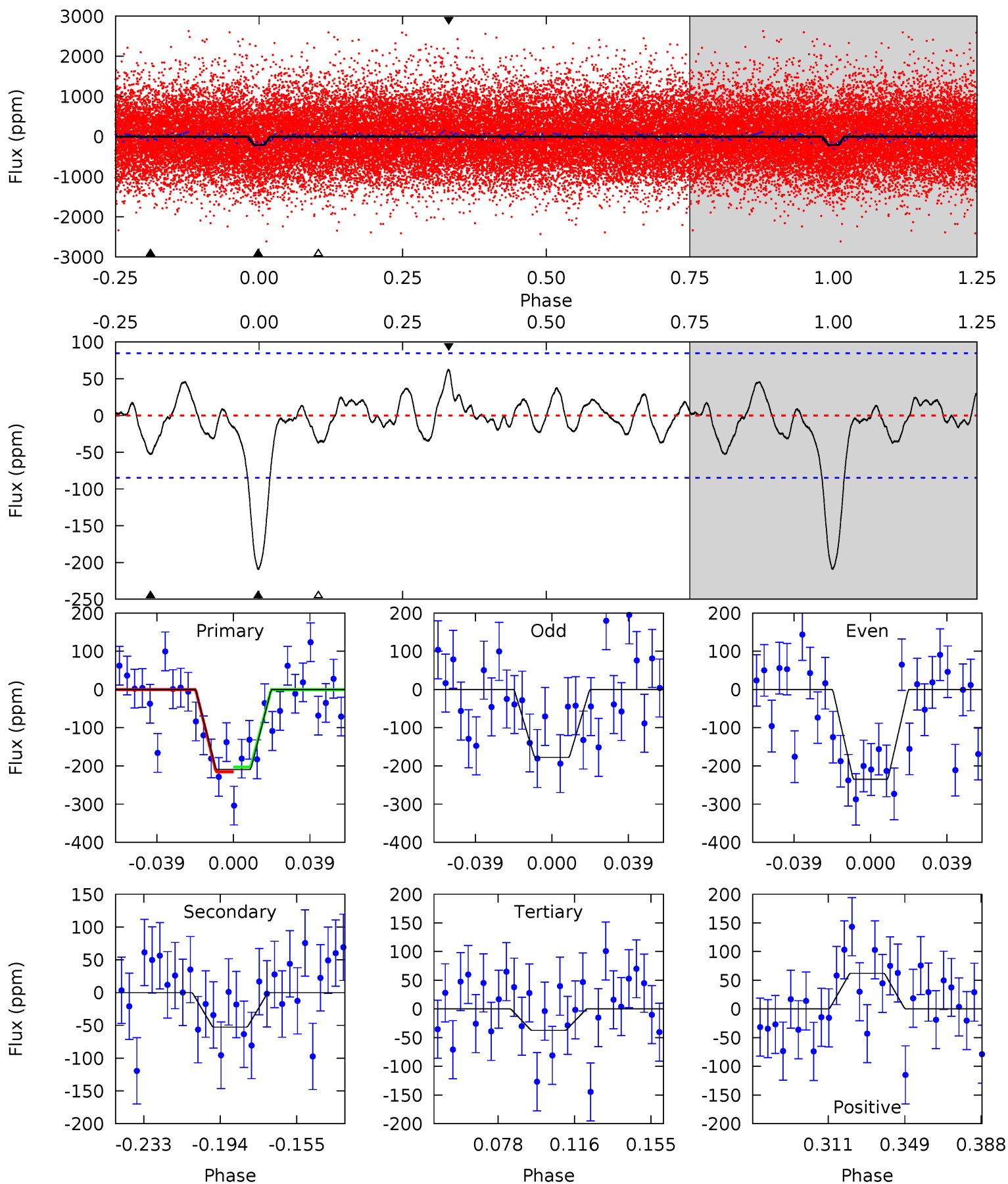
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	3.40	3.02	3.19	4.72	1.98	1.10	9.11	8.94	0.38	0.21	0.32	1.02	0.21	0.25



# Alt Model-Shift Uniqueness Test

009811915-01, P = 1.966827 Days, E = 130.720178 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	2.96	2.10	3.49	4.76	2.07	1.10	9.64	8.25	0.86	-0.53	1.61	0.91	0.23	0.37



### Stellar Parameters For KIC 009811915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5595^{+175}_{-195}$	$4.581^{+0.042}_{-0.136}$	$-0.240^{+0.300}_{-0.300}$	$0.796^{+0.161}_{-0.069}$	$0.890^{+0.090}_{-0.110}$	$2.487^{+0.477}_{-1.023}$
	+3%/-3%	+1%/-3%	+125%/-125%	+20%/-9%	+10%/-12%	+19%/-41%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 009811915-01 / KOI 7232.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-54 \pm 16$	$1.54^{+1.25}_{-0.91}$	$1820^{+97}_{-80}$	$3957^{+1804}_{-746}$	$11^{+57}_{-7}$
Alt.	$-53 \pm 18$	$1.64^{+1.23}_{-0.99}$	$1820^{+105}_{-78}$	$3841^{+1647}_{-676}$	$9.096^{+44.090}_{-6.245}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$



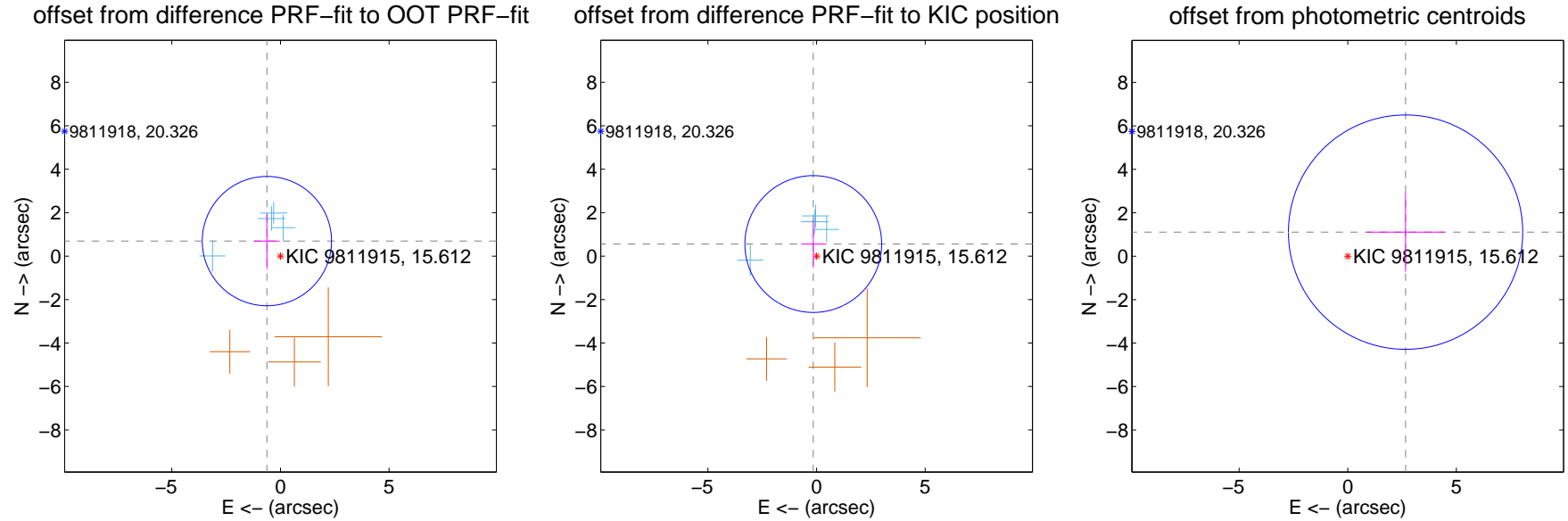
## DV Centroid Data

Supplemental centroid analysis for 009811915-01. Kepler magnitude: 15.61. Transit SNR 8.59

There are 4 quarters with good PRF difference image offsets

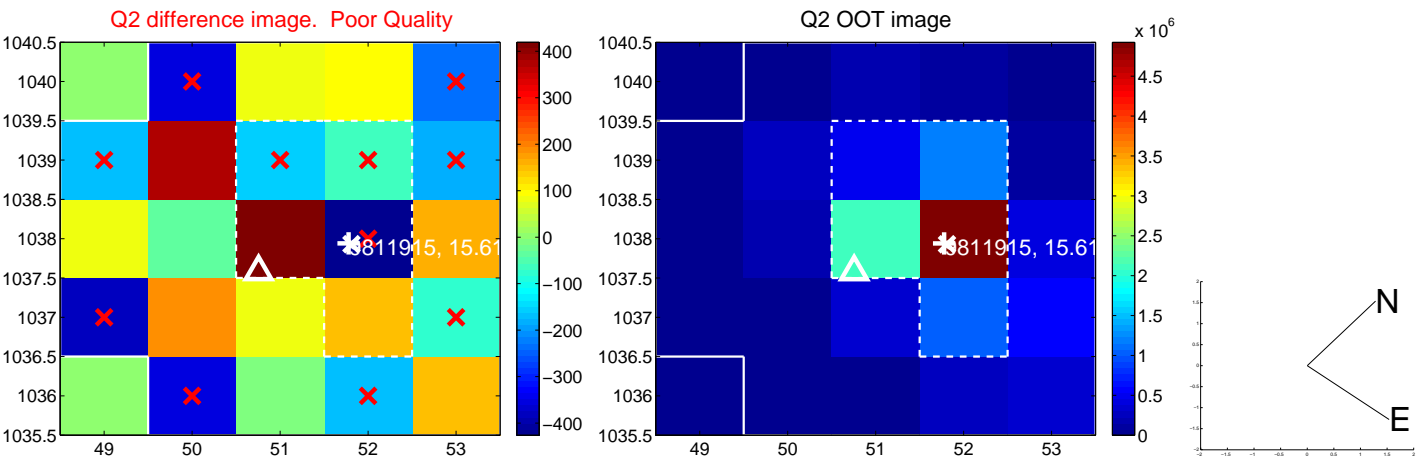
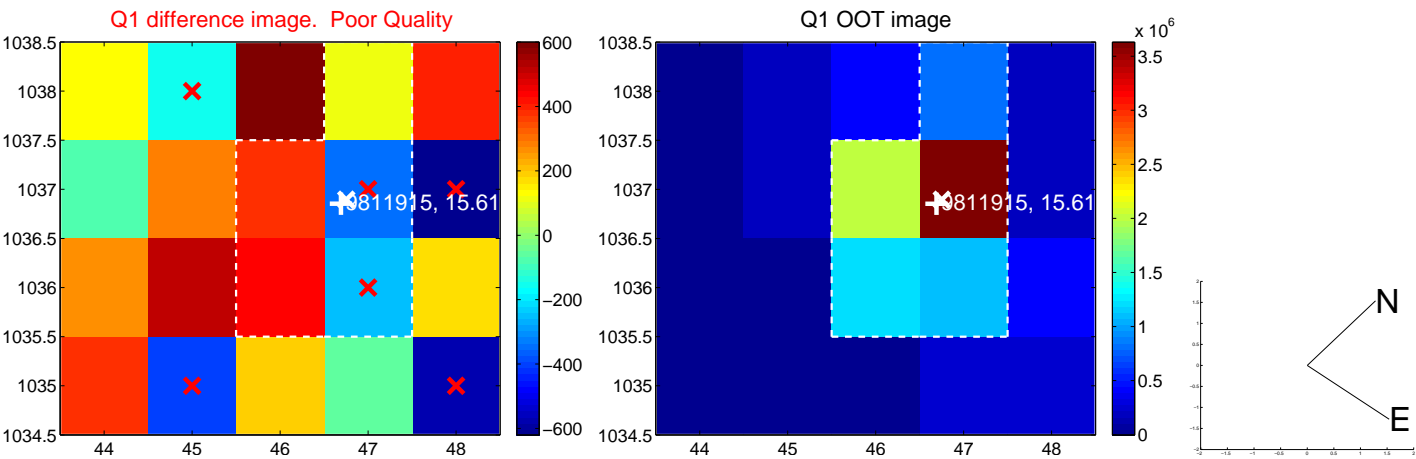
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.932 \pm 0.992$	0.94	$0.624 \pm 0.590$	$0.692 \pm 1.282$
PRF-fit source offset from KIC position	$0.577 \pm 1.049$	0.55	$0.152 \pm 0.549$	$0.557 \pm 1.078$
photometric centroid source offset	$2.89 \pm 1.80$	1.60	$-2.66 \pm 1.79$	$1.11 \pm 1.82$

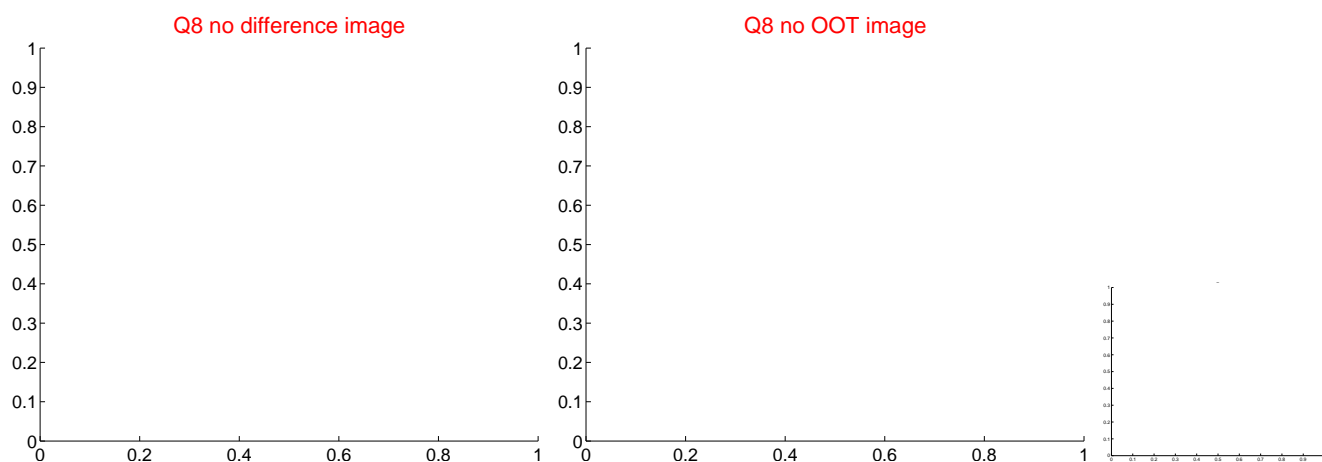
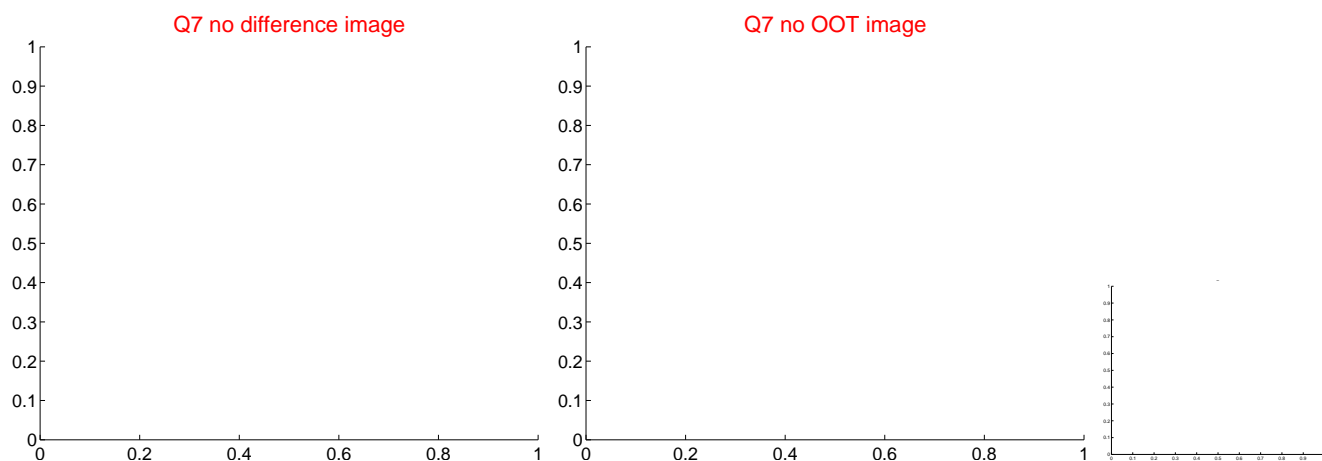
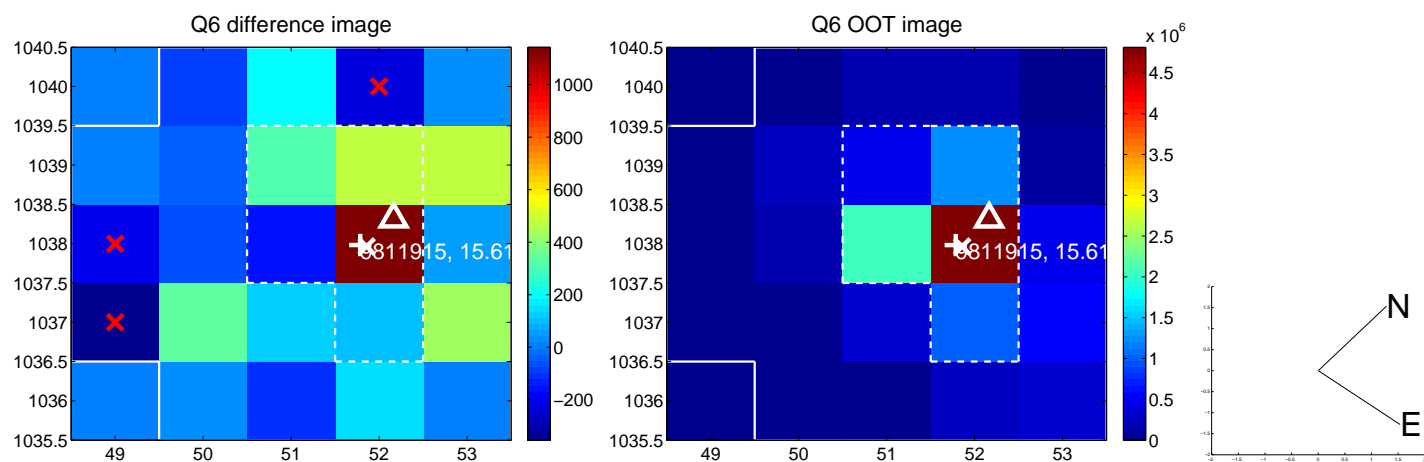
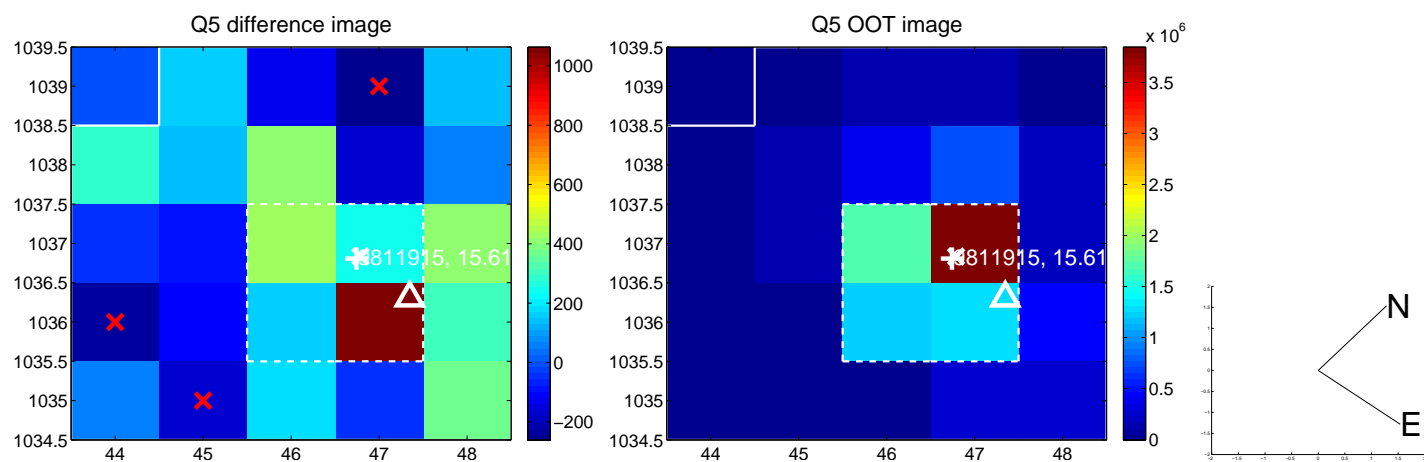


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

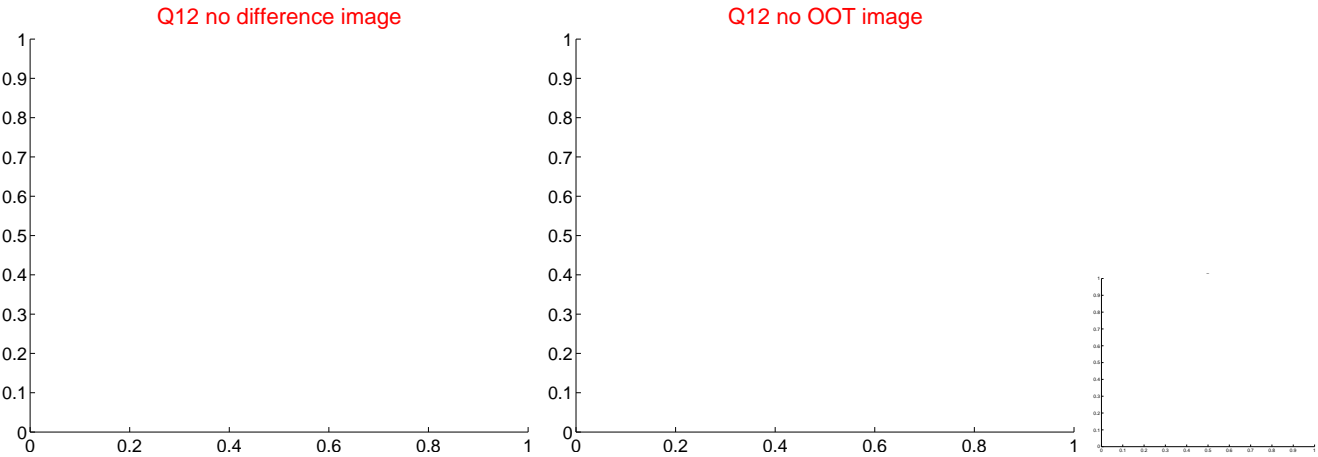
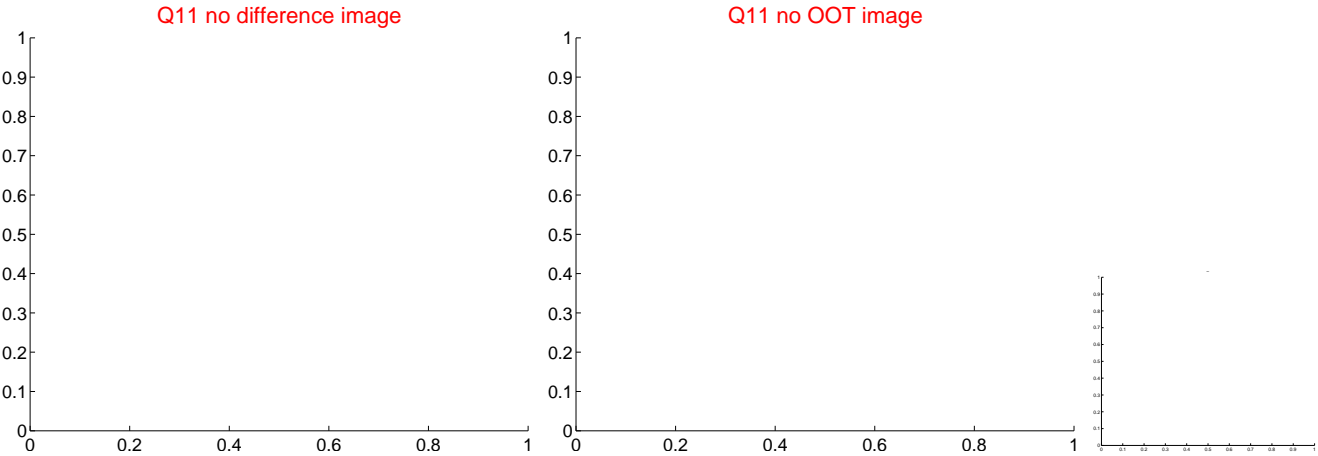
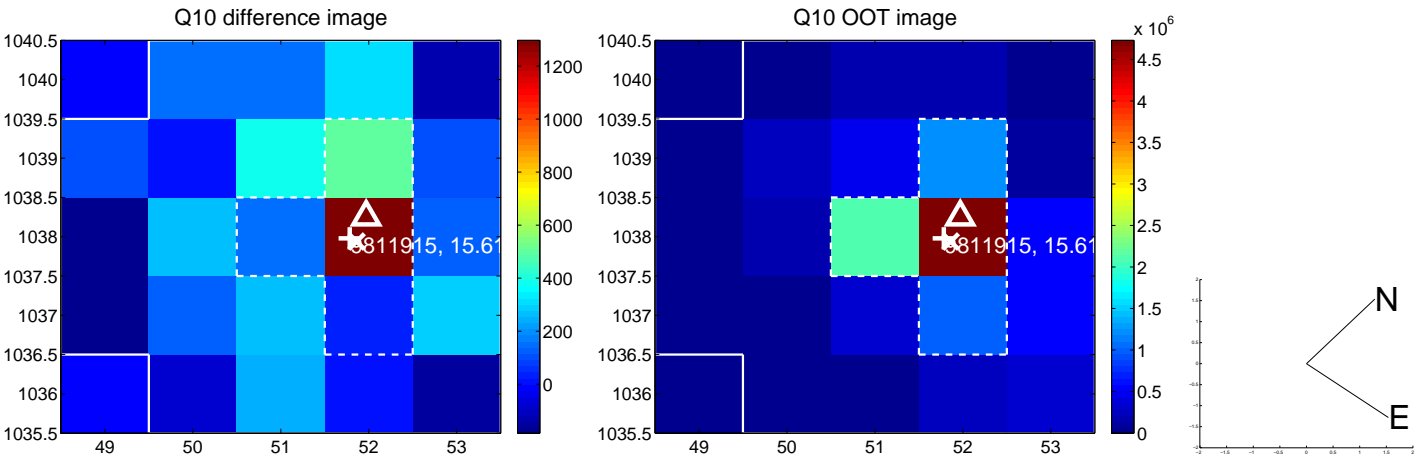
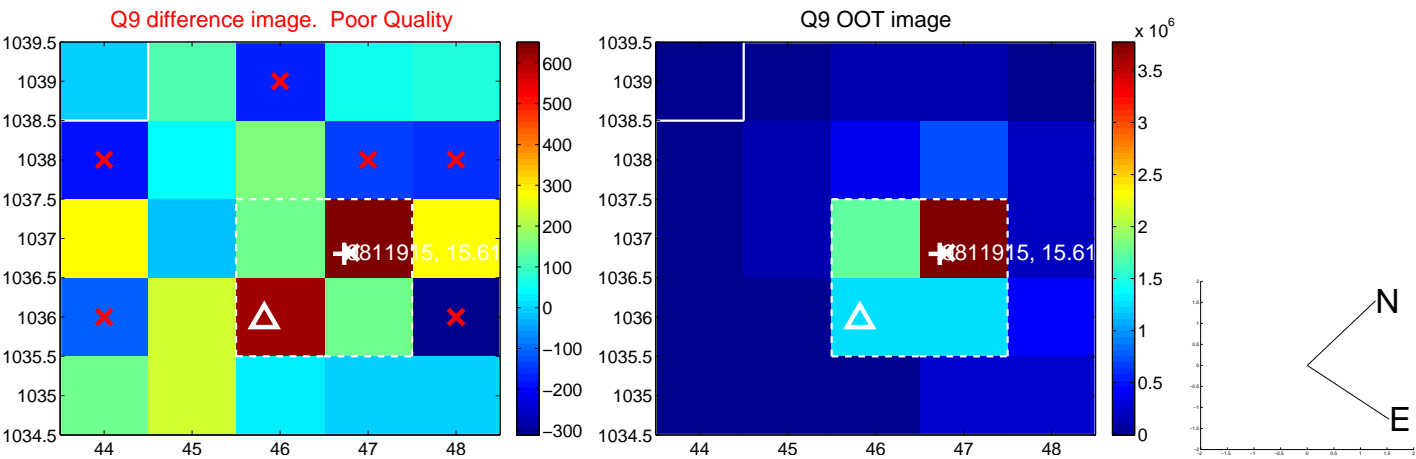
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



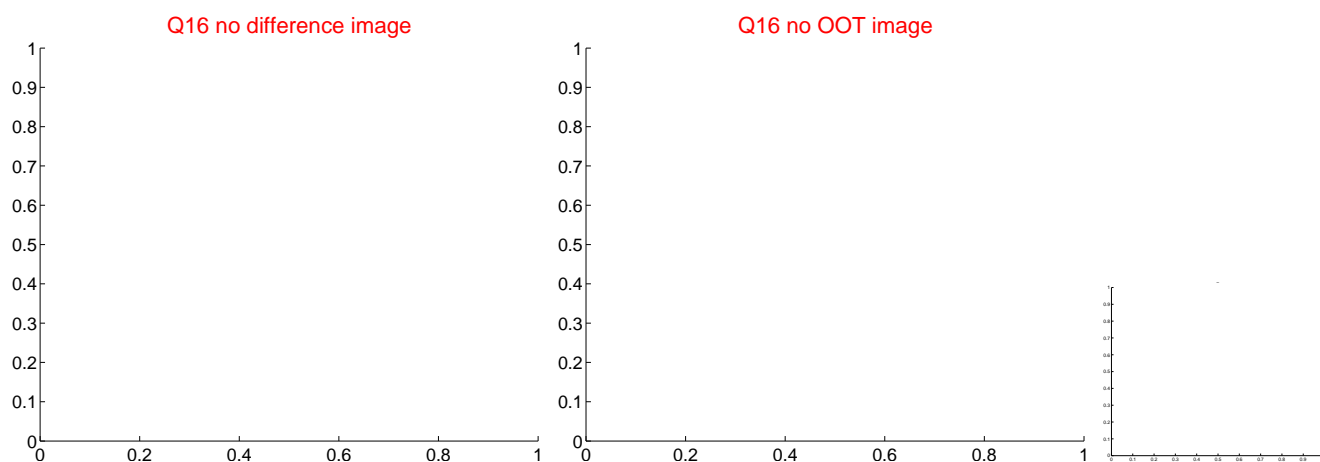
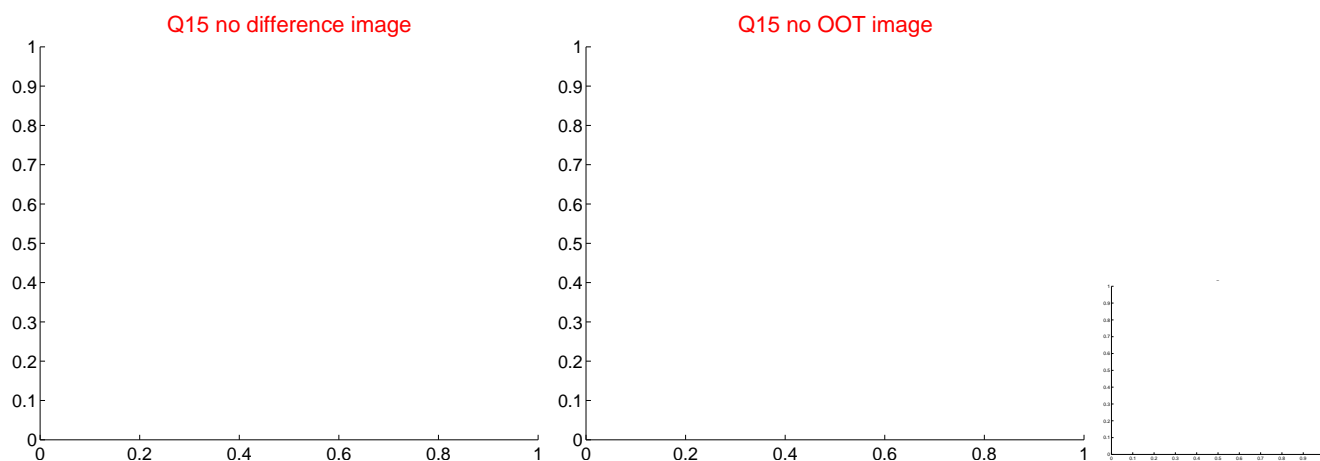
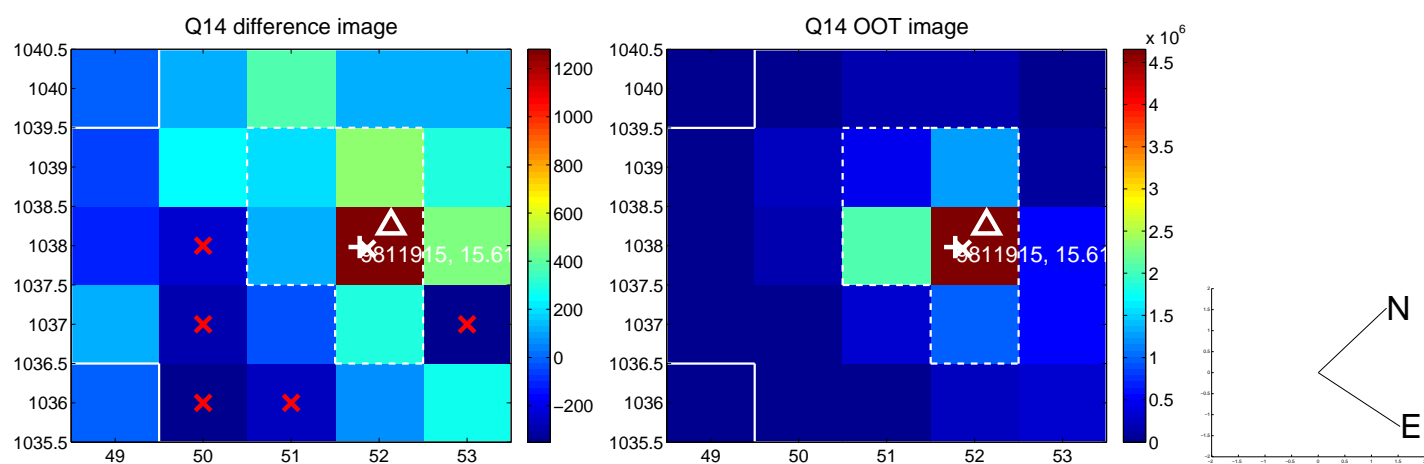
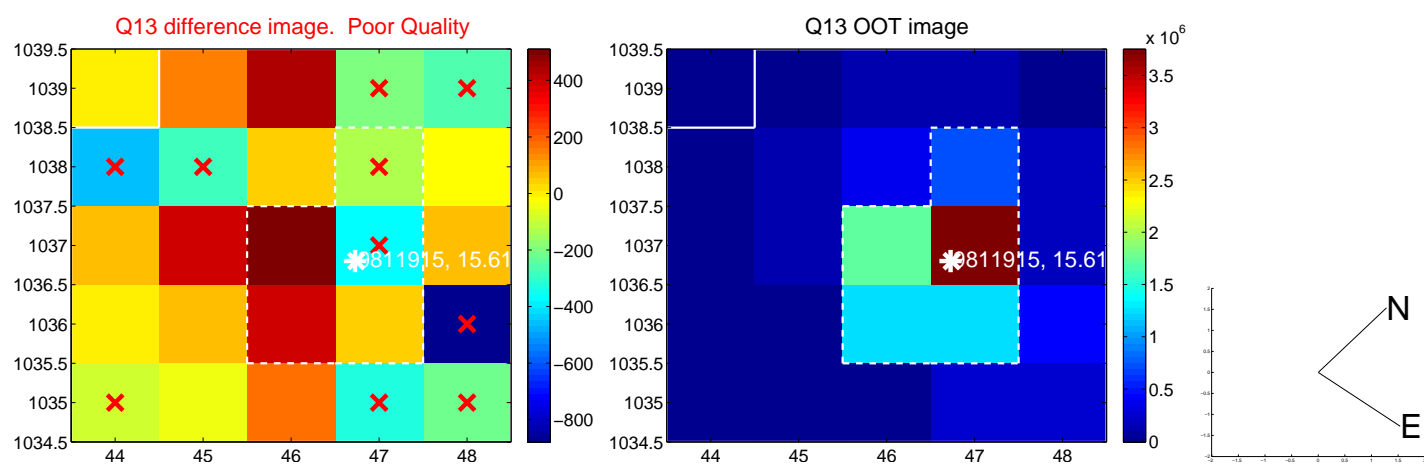
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

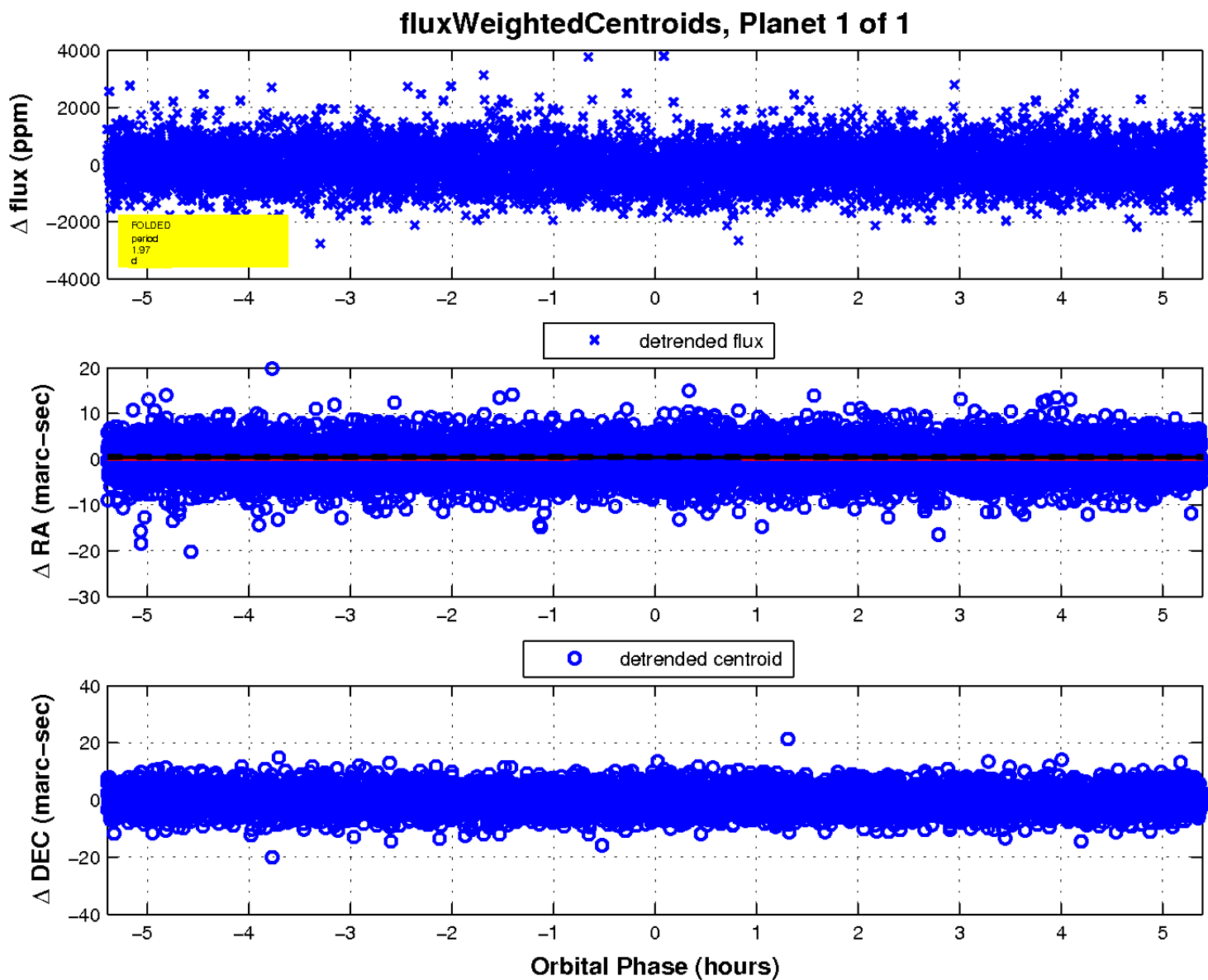
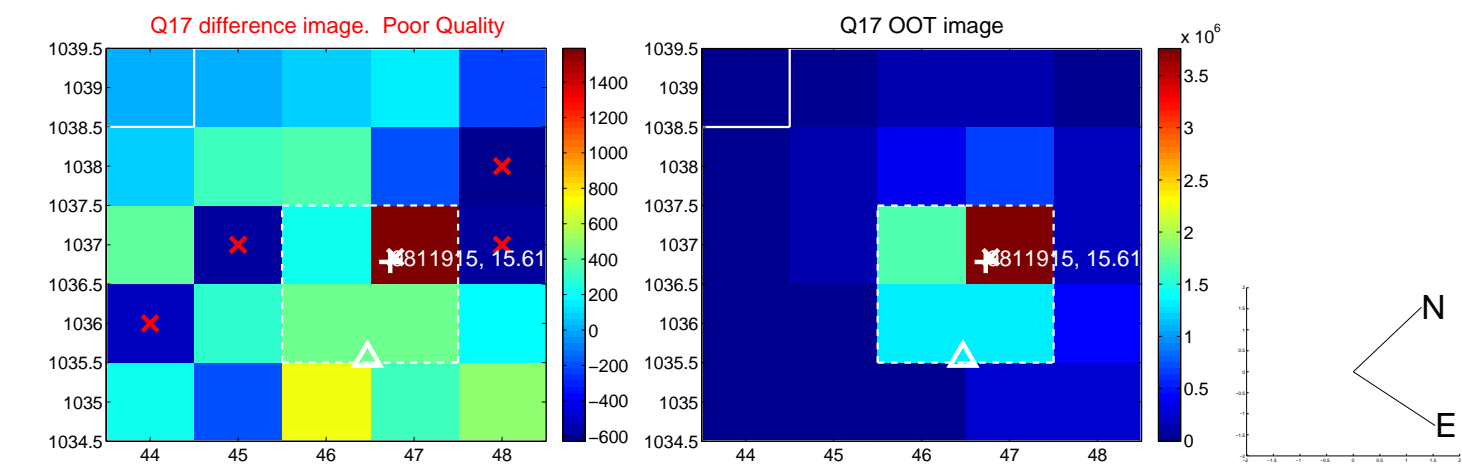


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

